

REMARKS

Please reconsider the application in view of the above amendments and the following remarks. Applicants thank the Examiner for accepting the drawings filed on March 13, 2007, and for carefully considering this application. Applicants also thank the Examiner for indicating that all references listed in the Information Disclosure Statement submitted on December 20, 2005, have been considered. Finally, Applicants thank the Examiner for acknowledging receipt of the claim for foreign priority under 35 U.S.C. § 119 through receipt of the certified copies of the priority documents for this matter.

Disposition of Claims

Claims 1-11, 23-33, and 36 were pending in this application. By way of this reply, claims 2, 5, and 28 are cancelled without prejudice or disclaimer. New claims 37-39 are added by this reply. Accordingly, claims 1, 3, 4, 6-11, 23-27, 29-33, 36, and 37-39 are now pending in the present application. Claim 1 is independent. The remaining claims depend, either directly or indirectly, from claim 1.

Examiner Interview

Applicants thank the Examiner for the courtesies extended during the Examiner Interview on July 2, 2009. During the Examiner Interview, Applicants' representative discussed the claimed invention and the cited prior art, and encourage the Examiner to contact the Applicants' representative further should clarification or additional information be required. At the close of the Examiner Interview, no agreement was reached. Applicants have reviewed the Interview Summary issued on July 7, 2009, and agree with its content.

Specification Amendments

Paragraph [0076] of the published specification is amended by way of this reply to provide an example of a simulator. No new matter is added by this amendment, as the amendment is merely to provide a well known example of how to perform a simulation in a numerical model at the time of filing.

Amendments to the Claims

Claims 1, 3, 4, 6-11, 23, 25-27, 29-33, and 36 are hereby amended to clarify aspects of the invention and/or address informalities. No new matter has been added by way of these amendments. Support for the amendments may be found, for example, paragraphs [0007], [0057], [0062], [0068], [0071], [0076]-[0079], [0093], and [00121] of the originally filed specification.

Rejections under 35 U.S.C. § 112

Claims 1-11, 23-33, and 36 are rejected under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter that the Applicants regard as the invention. *See* Action, p. 2. As discussed above, claims 2, 5, and 28 are cancelled by way of this reply without prejudice or disclaimer, and thus the rejection is now moot as to claims 2, 5, and 28. To the extent the rejection may apply to the remaining claims, the rejection is respectfully traversed.

The Examiner contends that “controlling...according to parameters provided from a storage model,” as recited in independent claim 1, is indefinite because it is unclear what constitutes

a model and parameters. *See* Action, p. 2. Accordingly, independent claim 1 has been amended to further clarify the invention by reciting “[a] method for improving the recovery efficiency of storing fresh water into an aquifer using a storage model of the aquifer.” Amended independent claim 1 also recites “receiving data from a plurality of sensors, wherein each of the plurality of sensors measures and monitors a quality parameter of water at one of the plurality of screens.” Applicants assert that the claim as amended clearly defines what constitutes the model and a quality parameter. In view of this, amended independent claim 1 now recites subject matter that is distinctly claimed.

The Examiner further contends that “this step of controlling is unclear when considered with dependent claims (*e.g.*, claim 2) which require modifying flow of water based on monitored water quality (*i.e.*, since the flow is modified based on monitored parameters, not model parameters).” *See* Action, p. 2. As claim 2 has been cancelled and its limitations incorporated into claim 1, Applicants assert that it is now clear that adjusting the screen is based on monitoring a quality parameter of water. Thus, in light of amended independent claim 1, the step of adjusting the screen is now clear when considered with the remaining dependent claims.

The Examiner also rejects claims 6 and 7 under 35 U.S.C. § 112, second paragraph, because the Examiner contends that it is unclear “if the selecting and stopping of claim 6 relates to the selecting and modifying of claim 2.” *See* Action, p. 2. Claim 8 is similarly rejected with respect to the selecting and enabling steps. *Id.* Amended claim 1 now clarifies that a screen is identified, and amended claims 6 and 7 now describe selecting an *additional* screen for modifying the flow of water. Accordingly, it is clear that the additional screen of claims 6 and 7 is different than the screen of claim 1. Likewise, amended claim 8 describes selecting an additional screen for

modifying the flow of water. Accordingly, it is clear that the additional screen of claim 8 is different than the screen of claim 1.

The Examiner also rejects claim 9 under 35 U.S.C. § 112, second paragraph, because the Examiner contends that it is unclear “whether the ‘main’ well can be the same as the wells first mentioned in claim 1.” *See* Action, p. 3. Claim 9 has been amended to clarify that the main well is the same as the “at least one well” first mentioned in claim 1.

In view of the above, amended claims 1, 6, 7, and 9 now satisfy the requirements under 35 U.S.C. § 112, second paragraph. Further, claims 3, 4, 10, 11, 23-27, 29-33, and 36, which depend either directly or indirectly on claim 1, also satisfy the requirements of 35 U.S.C. § 112, second paragraph, for at least the same reasons as claim 1. Accordingly, withdrawal of this rejection is respectfully requested.

Rejections under 35 U.S.C. § 103

Claims 1-11, 23-33, and 36 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over G.B. Publication No. 1112955 (hereinafter “Kan”) in view of a printed publication entitled, “ASR-UK: Elucidating the Hydrogeological Issues Associated With Aquifer Storage and Recovery in the UK,” UKWIR Report Ref. No. 02/WR/09/2, 2002 (hereinafter “ASR-UK”). As discussed above, claims 2, 5, and 28 are cancelled by way of this reply without prejudice or disclaimer, and thus the rejection is now moot as to claims 2, 5, and 28. To the extent the rejection may apply to the remaining claims, the rejection is respectfully traversed.

MPEP § 2143 states that “[t]he key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious.” The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1739, 75 U.S.L.W. 4289 (2007) noted that the analysis supporting a rejection under 35 U.S.C. § 103 should be made explicit. *See*, MPEP § 2143. The analysis presented by the Examiner to support the rejection of the claims under 35 U.S.C. § 103 in page 3 of the Action, indicates that the Examiner found no differences between the cited prior art and the claims besides a lack of the actual combination of the elements in a single prior art reference, *i.e.*, that the Examiner is relying solely on the teachings of the prior art. *See, e.g.*, MPEP § 2143(A). Applicants respectfully assert that the Examiner fails to meet the burden to show all of the elements of the amended claims are found in the cited prior art.

Amended independent claim 1 recites, in part, “determining, based on the interaction, that the flow of fresh water from one or more screens of the plurality of screens should be modified to maintain or improve produced water quality of the aquifer.” Further, amended independent claim 1 recites, in part, “adjusting the one or more screens to maintain or improve the produced water quality of the at least one well.”

Karr discloses a water supply system “combining features of horizontal wells and features of vertical wells.” *See* Karr, page 1, lines 12-15. Specifically, Karr teaches a caisson with horizontal radially extending screen pipes. *See, e.g.*, Karr, FIGS. 1-3. Each of the screen pipes in Karr has control valves. *See*, Karr, page 2, lines 12-21. Karr, however, fails to disclose when or how the valves are controlled. Karr also fails to disclose consideration of quality parameters when controlling the valves. Accordingly, Karr fails to disclose or render obvious at least the limitation of “determining, based on the interaction, that the flow of fresh water from one or more screens of

the plurality of screens should be modified to maintain or improve produced water quality of the aquifer,” as recited in amended independent claim 1. Similarly, Karr fails to disclose or render obvious the limitation of “adjusting the one or more screens to maintain or improve the produced water quality of the at least one well,” as recited in amended independent claim 1. Accordingly, Karr does not disclose or render obvious every element of amended independent claim 1.

Furthermore, ASR-UK fails to provide that which Karr lacks. Karr merely relates to a study of the benefits of Aquifer Storage Recovery (ASR) schemes (*see, e.g.*, ASR-UK, page 1, paragraph 1). Specifically, ASR-UK discloses developing models for ASR. *See* ASR-UK, page 1, paragraph 4. ASR-UK also discloses geochemical interactions between native and injected water. *See* ASR-UK, page 1, paragraph 5. However, ASR-UK fails to disclose controlling the flow of water by using a plurality of screens. Specifically, ASR-UK fails to disclose any kind of screen to control the inflow or outflow of water. Accordingly, ASR-UK fails to disclose or render obvious at least the limitation of “determining, based on the interaction, that the flow of fresh water from one or more screens of the plurality of screens should be modified to maintain or improve produced water quality of the aquifer,” as recited in amended independent claim 1. Similarly, ASR-UK fails to disclose or render obvious the limitation of “adjusting the one or more screens to maintain or improve the produced water quality of the at least one well,” as recited in amended independent claim 1. Accordingly, ASR-UK fails to disclose or render obvious every element of amended independent claim 1.

In view of the above, Examiner’s contentions do not support a rejection of amended independent claim 1. Likewise, Examiner’s contentions do not support a rejection of dependent

claims 3, 4, 6-11, 23, 25-27, 29-33, and 36, which depend either directly or indirectly from claim 1, for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

New Claim

By way of this reply, claims 37-39 are newly added. No new matter is added by way of the newly added claims, as support may be found, for example, in paragraphs [0019], [0033], [0034], [0061], and [0088] of the specification as filed. Applicants respectfully submit that the newly added claims are patentable for at least the reasons provided above with respect to amended independent claim 1, from which claims 37-39 depend. Accordingly, favorable consideration of the newly added claims is respectfully requested.

Conclusion

Applicants believe this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 17559/002001).

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Respectfully submitted,

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